

0300



OIPE

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/864,464

DATE: 08/14/2002 4.6  
TIME: 09:48:41

Input Set : A:\BB-1193 USDIV Corrected Seq List.txt

Output Set: N:\CRF3\08142002\I864464.raw

```

3 <110> APPLICANT: Falco, Savario Carl
4     Famodu, Omolayo O.
5     Simmons, Carl R.
7 <120> TITLE OF INVENTION: Plant Aminoacyl-tRNA Synthetase
9 <130> FILE REFERENCE: BB-1193
11 <140> CURRENT APPLICATION NUMBER: 09/864,464
12 <141> CURRENT FILING DATE: 2001-05-24
14 <150> PRIOR APPLICATION NUMBER: 60/093,530
15 <151> PRIOR FILING DATE: 1998-07-21
17 <160> NUMBER OF SEQ ID NOS: 37
19 <170> SOFTWARE: Microsoft Office 97
21 <210> SEQ ID NO: 1
22 <211> LENGTH: 528
23 <212> TYPE: DNA
24 <213> ORGANISM: Zea mays
26 <400> SEQUENCE: 1
27 gcacgaggty aacaaggaga tggcctcata cegtttatac actgtcgtac ccagactcct 60
28 tqqttctcatt gacagcacaa caaactggta cattcgattc aaccgaaagc gactcaaggg 120
29 agagaacggc cttgacgata cccttcatgc cctaaacacc ctttttgagg ttctgttcac 180
30 ttltgtccgt ggactggcac cttttacccc ttctcttact gacaacatct acctcaagct 240
31 tctacctcac attcctaagg agctgcaaag tgcagatccc cgaagcgtgc acttcctgcc 300
32 attccccgat gttcgcgaag agctgttcga tgaagagggtg gagcgacgtg ttggtcgcac 360
33 gcagcgtgtc attgaacttg ctctgtgtat gcgtgaacgt cgcgccattg gtctcaagca 420
34 gctctcaag acactggtag tcattcactc cgatcctcaa tatcttgagg atgtcaagtc 480
35 ccttgagaag tatatcagcg aagagttgaa tgtgcgagac ctctgtct 528
37 <210> SEQ ID NO: 2
38 <211> LENGTH: 175
39 <212> TYPE: PRT
40 <213> ORGANISM: Zea mays
42 <400> SEQUENCE: 2
43 His Glu Val Asn Lys Glu Met Ala Ser Tyr Arg Leu Tyr Thr Val Val
44 1 5 10 15
46 Pro Arg Leu Leu Gly Leu Ile Asp Ser Thr Thr Asn Trp Tyr Ile Arg
47 20 25 30
49 Phe Asn Arg Lys Arg Leu Lys Gly Glu Asn Gly Leu Asp Asp Thr Leu
50 35 40 45
52 His Ala Leu Asn Thr Leu Phe Glu Val Leu Phe Thr Leu Cys Arg Gly
53 50 55 60
55 Leu Ala Pro Phe Thr Pro Phe Leu Thr Asp Asn Ile Tyr Leu Lys Leu
56 65 70 75 80
58 Leu Pro His Ile Pro Lys Glu Leu Gln Ser Ala Asp Pro Arg Ser Val
59 85 90 95
61 His Phe Leu Pro Phe Pro Asp Val Arg Glu Glu Leu Phe Asp Glu Glu

```

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```

62          100          105          110
64 Val Glu Arg Arg Val Gly Arg Met Gln Arg Val Ile Glu Leu Ala Arg
65          115          120          125
67 Val Ser Arg Glu Arg Arg Ala Ile Gly Leu Lys Gln Pro Leu Lys Thr
68          130          135          140
70 Leu Val Val Ile His Ser Asp Pro Gln Tyr Leu Glu Asp Val Lys Ser
71 145          150          155          160
73 Leu Glu Lys Tyr Ile Ser Glu Glu Leu Asn Val Arg Asp Leu Val
74          165          170          175

```

76 &lt;210&gt; SEQ ID NO: 3

77 &lt;211&gt; LENGTH: 451

78 &lt;212&gt; TYPE: DNA

79 &lt;213&gt; ORGANISM: Oryza sativa

81 &lt;220&gt; FEATURE:

82 &lt;221&gt; NAME/KEY: unsure

83 &lt;222&gt; LOCATION: (386)

84 &lt;223&gt; OTHER INFORMATION: n=a,c,g or t

85 &lt;223&gt; OTHER INFORMATION: n=a,c,g or t

87 &lt;220&gt; FEATURE:

88 &lt;221&gt; NAME/KEY: unsure

89 &lt;222&gt; LOCATION: (417)

90 &lt;223&gt; OTHER INFORMATION: n=a,c,q or t

92 &lt;220&gt; FEATURE:

93 &lt;221&gt; NAME/KEY: unsure

94 &lt;222&gt; LOCATION: (443)

95 &lt;223&gt; OTHER INFORMATION: n=a,c,g or t

97 &lt;220&gt; FEATURE:

98 &lt;221&gt; NAME/KEY: unsure

99 &lt;222&gt; LOCATION: (449)

100 &lt;223&gt; OTHER INFORMATION: n=a,c,g or t

W--&gt; 102 &lt;400&gt; 3

103 attccccctc tttgtttcca agccctctct ccccttacc cccgcgcgcc gccgcgcgcg 60

104 ccgcctcctc acccgaaacc ctagecccat tcgcgcgggt cgccgcctca cccgaaaccc 120

105 tagccccatt cgccgcgggg gtcgcggcct caggagcgga ggccatggag gacgtctgcg 180

106 aaggggaagga cttctccttc cccgcggagg aggagcgct gctcaagctg tggtcggagc 240

107 tcgacgcctt ccacgagcag ctccgcgcga cgaagggcgg cgaggagttc atcttctacg 300

108 acggggcccc gtctgccacc ggctcccg cactatggcca catctctcgc ggcacaaatc 360

W--&gt; 109 aggacgtggt caccgccac cagtcnatgc gcggcgcca cgtctcccg cgcttcnggt 420

W--&gt; 110 gggactgcca tggctcccc tcnagttcna t 451

112 &lt;210&gt; SEQ ID NO: 4

113 &lt;211&gt; LENGTH: 83

114 &lt;212&gt; TYPE: PRI

115 &lt;213&gt; ORGANISM: Oryza sativa

117 &lt;220&gt; FEATURE:

118 &lt;221&gt; NAME/KEY: UNSURE

119 &lt;222&gt; LOCATION: (76)

120 &lt;223&gt; OTHER INFORMATION: Xaa = ANY AMINO ACID

122 &lt;400&gt; SEQUENCE: 4

123 Phe Ser Phe Pro Ala Glu Glu Glu Arg Val Leu Lys Leu Trp Ser Glu

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```

124      1              5              10              15
126 Leu Asp Ala Phe His Glu Gln Leu Arg Arg Thr Lys Gly Gly Glu Glu
127              20              25              30
129 Phe Ile Phe Tyr Asp Gly Pro Pro Phe Ala Thr Gly Leu Pro His Tyr
130              35              40              45
132 Gly His Ile Leu Ala Gly Thr Ile Lys Asp Val Val Thr Arg His Gln
133              50              55              60
W--> 135 Ser Met Arg Gly Arg His Val Ser Arg Arg Phe Xaa Trp Asp Cys His
136      65              70              75              80
138 Gly Ser Pro
141 <210> SEQ ID NO: 5
142 <211> LENGTH: 575
143 <212> TYPE: DNA
144 <213> ORGANISM: Glycine max
146 <220> FEATURE:
147 <221> NAME/KEY: unsure
148 <222> LOCATION: (21)
149 <223> OTHER INFORMATION: n=a,c,g or t
151 <220> FEATURE:
152 <221> NAME/KEY: unsure
153 <222> LOCATION: (219)
154 <223> OTHER INFORMATION: n=a,c,g or t
156 <220> FEATURE:
157 <221> NAME/KEY: unsure
158 <222> LOCATION: (500)
159 <223> OTHER INFORMATION: n=a,c,g or t
161 <220> FEATURE:
162 <221> NAME/KEY: unsure
163 <222> LOCATION: (525)
164 <223> OTHER INFORMATION: n=a,c,g or t
166 <220> FEATURE:
167 <221> NAME/KEY: unsure
168 <222> LOCATION: (564)
169 <223> OTHER INFORMATION: n=a,c,g or t
171 <400> SEQUENCE: 5
W--> 172 taccttatca actcacctgt ngtgcggtgt gagccacttc gtttcaagaa agaaggagtt 60
173 tatggtgttg ttagggatgt ttctctccct tggtataatg catatcggtt ccttggtcaa 120
174 aatgcaaaga ggggtgaagt tgaagggtcta gcaccttttg ttccctttga tcaggccaca 180
W--> 175 cttctgaact caacgaatgt tcttgatcaa tggattaant cagccaccca aagccttatt 240
176 cattttgtcc gacaagaaat ggatgggttat cgcctttaca cagtgggttc ttacctcttg 300
177 aagtttcttg ataaccttac aaatatattat gtaagggtca atcgtaagag acttaaagg 360
178 cgttctgggg aagaagactg caggatagca ctatcaactc ttaccatgt gcttttgta 420
179 tcttqtaaaq tgatggctcc ttttacacct ttcttcaact aggtgtctca tcaaaatatg 480
W--> 180 cgaaaagtgt ctaatggtcn gaggggaagcg tacactattg cggtnttcc tccagaagaag 540
W--> 181 gagggagggg gacgactttt gcgngtggtt ttgga 575
183 <210> SEQ ID NO: 6
184 <211> LENGTH: 106
185 <212> TYPE: PRT
186 <213> ORGANISM: Glycine max

```

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Output Set: N:\CRF3\08142002\I864464.raw

```

188 <220> FEATURE:
189 <221> NAME/KEY: UNSURE
190 <222> LOCATION: (18)
191 <223> OTHER INFORMATION: Xaa = ANY AMINO ACID
193 <400> SEQUENCE: 6
194 Phe Asp Gln Ala Thr Leu Leu Asn Ser Thr Asn Val Leu Asp Gln Trp
195 1 5 10 15
W--> 197 Ile Xaa Ser Ala Thr Gln Ser Leu Ile His Phe Val Arg Gln Glu Met
198 20 25 30
200 Asp Gly Tyr Arg Leu Tyr Thr Val Val Pro Tyr Leu Leu Lys Phe Leu
201 35 40 45
203 Asp Asn Leu Thr Asn Ile Tyr Val Arg Phe Asn Arg Lys Arg Leu Lys
204 50 55 60
206 Gly Arg Ser Gly Glu Glu Asp Cys Arg Ile Ala Leu Ser Thr Leu Tyr
207 65 70 75 80
209 His Val Leu Leu Leu Ser Cys Lys Val Met Ala Pro Phe Thr Pro Phe
210 85 90 95
212 Phe Thr Glu Val Leu Tyr Gln Asn Met Arg
213 100 105
215 <210> SEQ ID NO: 7
216 <211> LENGTH: 572
217 <212> TYPE: DNA
218 <213> ORGANISM: Triticum aestivum
220 <400> SEQUENCE: 7
221 gcacgagctt tagggtgatt gccgataact atgtgactga tgatagtgga accggtgttg 60
222 tccattgtgc tccatgcattt ggtgaagatg atcctgcgtt ttgccttagt gctggaatta 120
223 ttgaggctag tggacttggt gtcgctgttg atgatgatgg tcacttcatt gagaagatat 180
224 ctcagttcaa agggcgacat gtcaaagagg ctgacaagga tatcatcaat gctgttaagg 240
225 ataaaggaag acttggttagc aaagggagca ttgagcactc ttatccgtat tgttggcgct 300
226 cgggcactcc tcttattttac cgggctgttc caagctggtt tatcaagggt gaaaagatca 360
227 ggatcagtt actagaatgc aacaaggaga cctactgggt tccagattat gtcaaggaaa 420
228 agagattcca taactggcta gaaggtgcta gggactggc tgtagcaga agtagattct 480
229 ggggtactcc acttccagtg tggatcagcc aagatggtga agaaaaaaaa aaaaaaaaaa 540
230 aaaaaaaaaa aaagaaaaaaaa aaaaaaaaaa aa 572
232 <210> SEQ ID NO: 8
233 <211> LENGTH: 173
234 <212> TYPE: PRT
235 <213> ORGANISM: Triticum aestivum
237 <400> SEQUENCE: 8
238 Thr Ser Phe Arg Val Ile Ala Asp Asn Tyr Val Thr Asp Asp Ser Gly
239 1 5 10 15
241 Thr Gly Val Val His Cys Ala Pro Ala Phe Gly Glu Asp Asp His Arg
242 20 25 30
244 Val Cys Leu Ser Ala Gly Ile Ile Glu Ala Ser Gly Leu Val Val Ala
245 35 40 45
247 Val Asp Asp Asp Gly His Phe Ile Glu Lys Ile Ser Gln Phe Lys Gly
248 50 55 60
250 Arg His Val Lys Glu Ala Asp Lys Asp Ile Ile Asn Ala Val Lys Asp
251 65 70 75 80

```

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TIME: 09:48:41

Input Set : A:\BB-1193 USDIV Corrected Seq List.txt

Output Set: N:\CRF3\08142002\I864464.raw

```

253 Lys Gly Arg Leu Val Ser Lys Gly Ser Ile Glu His Ser Tyr Pro Tyr
254             85             90             95
256 Cys Trp Arg Ser Gly Thr Pro Leu Ile Tyr Arg Ala Val Pro Ser Trp
257             100            105            110
259 Phe Ile Lys Val Glu Lys Ile Arg Asp Gln Leu Leu Glu Cys Asn Lys
260             115            120            125
262 Glu Thr Tyr Trp Val Pro Asp Tyr Val Lys Glu Lys Arg Phe His Asn
263             130            135            140
265 Trp Leu Glu Gly Ala Arg Asp Trp Ala Val Ser Arg Ser Arg Phe Trp
266             145            150            155            160
268 Gly Thr Pro Leu Pro Val Trp Ile Ser Gln Asp Gly Glu
269             165            170
271 <210> SEQ ID NO: 9
272 <211> LENGTH: 2175
273 <212> TYPE: DNA
274 <213> ORGANISM: Zea mays
276 <400> SEQUENCE: 9
277 acttgagcct ccaccttctc cgcgtctcac cttcttctcc gttctccttc cgctcccttc 60
278 ttcacaacga agccctagtg tcccgcgaca tggcatctgg tctggaggag aaactcgcgg 120
279 ggcctctcaac gggcggcgac gggcaaaatc ctccgccggc gggtgagggc ggagaggagc 180
280 cgcagctctc gaagaatgcg aagaagagag aggagaagag gaagaagctg gaagaggagc 240
281 ggaggctcaa ggaggaagag aagaagaaca aggctgcggc tgccagtgga aaacctcaga 300
282 aggcattctg tctgacgat gatgacatgg atcccactca atactatgag aataggctca 360
283 aggcctctga ttcactgaag gccacaggtg taaaccccta tcccataag ttcccggttg 420
284 gcatttctgt acccgaatac attgagaagt acaggacctt gagcgagggg gagaagctta 480
285 cagatgtggc agagtgttta gctgggagga tcatgaacaa gagaacatcg tcgtcgaagc 540
286 tattctttta tgatctttat ggtggtggca tgaaggttca agtgatggct gatgccagga 600
287 cctcagagtt ggatgaagct gaattttcta agtaccactc aggtgtgaag cgagggtgata 660
288 ttgttggcat atgtggatat ccaggaaaaa gcaaccgagg ggagcttagt gtatttccaa 720
289 agagatttgt cgtcctctct ccatgtcttc atatgatgcc tcgacagaag ggtgaaggaa 780
290 gtgcagtgcc tgtaccgtgg actccaggaa tgggtaggaa catcgaaaat tatgttttga 840
291 gggaccagga aactcgggtat cgtcaaaagt atcttgatct tatggtaaac catgaagtga 900
292 ggcacatctt caagacacga tctaaaattg tctcatttat ccgaaagttt cttgatgacc 960
293 gtgaattttt ggagggtggag actccgatga tgaacatgat tgctggtgga gcagctgcaa 1020
294 ggccttttgt tacacatcac aatgaattaa acatgcggct ttttatgcgc attgctcctg 1080
295 aattatatct gaaggaactg gttgttgggt gattggaccg tgtttatgaa attggaaagc 1140
296 aattcaggaa tgaaggaatt gatttaacac acaatcctga attcacaact tgtgaatttt 1200
297 atatggcgta tgcagattat aatgatttga tggagcttac tgaaaccatg ttgtcaggca 1260
298 tqgttaagga cctgacaggt ggcataaga taaaatatca tgcaaaggga gttactaacc 1320
299 cccaataga aattgatttc acgcctccct tcagaaggat agatatgatt aaagatttgg 1380
300 aggctatggc caatctcagt ataccaaaag atctatcaag tgatgaagcg aatcgttatt 1440
301 tgatagaagc atgtgtgaag tatgatgtga aatgtccacc tcccaaacg acatcgcggt 1500
302 tgcttgacaa gttggttggc catttcttgg aggagacatg tgtgaatcca acatttatca 1560
303 tcaatcatcc agagataatg agtccattag caaagtggca taggtcccga cctggattga 1620
304 ctgagagggt cgagttgttt gtttaacaaac atgaggtgtg caacgcatac acagagttga 1680
305 acgatcctgt tgtgcagagg caacggtttg aggaacaact aaaggaccgt caatctggtg 1740
306 atgacgaagc tatggctttg gacgaacat tctgtactgc ctttgagtat ggtttggcac 1800
307 caacaggtgg ttggggcttg ggaattgac gccacagat gttgctaaca gattctcaga 1860
308 acattaaagg agtacttcta ttcccggtca tgaagcctca agagtagtaa tccacagcca 1920

```

RAW SEQUENCE LISTING ERROR SUMMARY  
PATENT APPLICATION: US/09/864,464

DATE: 08/14/2002  
TIME: 09:48:42

Input Set : A:\BB-1193 USDIV Corrected Seq List.txt  
Output Set: N:\CRF3\08142002\I864464.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:3; N Pos. 386,417,443,449  
Seq#:4; Xaa Pos. 76  
Seq#:5; N Pos. 21,219,500,525,564  
Seq#:6; Xaa Pos. 18  
Seq#:11; N Pos. 396,408,478,536,570,573,597,598,603  
Seq#:14; Xaa Pos. 392,393,394  
Seq#:21; N Pos. 337,379  
Seq#:27; N Pos. 11,40,42,91,118,183,266,304,503,632,694  
Seq#:28; Xaa Pos. 13,14,30,39,61,88,101,167  
Seq#:29; N Pos. 439,466,526,536,564

## VERIFICATION SUMMARY

DATE: 08/14/2002

PATENT APPLICATION: US/09/864,464

TIME: 09:48:42

Input Set : A:\BB-1193 USDIV Corrected Seq List.txt

Output Set: N:\CRF3\08142002\I864464.raw

L:102 M:258 W: Mandatory Feature missing, <220> not found for SEQ ID#:3  
L:109 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:360  
L:110 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:420  
L:135 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:64  
L:172 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5 after pos.:0  
L:175 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5 after pos.:180  
L:180 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5 after pos.:480  
L:181 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5 after pos.:540  
L:197 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6 after pos.:16  
L:493 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11 after pos.:360  
L:494 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11 after pos.:420  
L:495 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11 after pos.:480  
L:496 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11 after pos.:540  
L:497 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11 after pos.:600  
L:655 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:14 after pos.:384  
L:966 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:21 after pos.:300  
L:967 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:21 after pos.:360  
L:1263 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27 after pos.:0  
L:1264 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27 after pos.:60  
L:1266 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27 after pos.:180  
L:1267 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27 after pos.:240  
L:1268 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27 after pos.:300  
L:1271 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27 after pos.:480  
L:1273 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27 after pos.:600  
L:1274 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27 after pos.:660  
L:1317 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:28 after pos.:0  
L:1320 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:28 after pos.:16  
L:1323 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:28 after pos.:32  
L:1326 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:28 after pos.:48  
L:1332 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:28 after pos.:80  
L:1335 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:28 after pos.:96  
L:1347 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:28 after pos.:160  
L:1388 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:29 after pos.:420  
L:1389 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:29 after pos.:480  
L:1390 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:29 after pos.:540